Claim Listing and Claim Amendments. Please enter the following claim amendments:

1. (Previously Presented) An apparatus configured to measure a fluid volume contained in a body cavity comprising:

at least one transducer assembly positioned in view of the body cavity and configured to transmit ultrasound to the body cavity, receive at least one echo reflected from surfaces associated with the body cavity; and

a computer in signal communication with the at least one transducer assembly, the computer having access to a look-up table of data, the computer being configured to determine at least one harmonic energy level value associated with the at least one echo, the data describing a correspondence between the harmonic energy level value and the fluid volume, and to calculate the fluid volume contained in the body cavity based upon the data.

2. (Previously Presented) The apparatus of claim 1, wherein the body cavity comprises a bladder and the fluid comprises urine.

3. (Previously Presented) The apparatus of claim 1, wherein the at least one transducer assembly includes a plurality of transducer assemblies positioned for transmitting and receiving echoes in a selected order.

4-7. Canceled.

8. (Previously Presented) The apparatus of claim 3, wherein the plurality of transducer assemblies includes an array of five.

9. (Previously Presented) The apparatus of claim 8, wherein the array of five transducer assemblies are respectively oriented at angles OA, OB, OC, OD, OE, to an axis orthogonal to the

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plane of the transducer assemblies array, the angles being approximately OA =-25°, OB = 0°, OC +25°, OO = +25°, OE = +40°.

10. (Previously Presented) The apparatus of claim 9, wherein the computer is configured to ascertain the fluid volume in terms of at least one of ranges of bladder filling and to indicate a clinically important bladder filling level.

11. (Previously Presented) The apparatus of claim 10, wherein the computer is coupled to a display to present within a look-up table of calibration factors inputted patient information, including at least one of gender, weight, age, and correction factors K derived from the look-up table of calibration factors.

12. (Previously Presented) The apparatus of claim 11, wherein the look-up table of calibration factors includes a calibration curve of ascertaining volume measurements from the acoustic power contained in the transmitted ultrasound to optimize correction factors K in a "self learning process".

13. (Previously Presented) The apparatus of claim 11, wherein volume information of the body cavity or the fluid may be frozen via a hold/start button connected with the at least one of the plurality of transducer assemblies.

14. (Previously Presented) The apparatus of claim 3, wherein the plurality of transducer assemblies are positioned so that the echo reflecting areas of the walls of the cavity are approximately located in a single cross-sectional sagittal plane.

15. (Previously Presented) The apparatus of claim 14, wherein the plurality of transducer assemblies are approximately disk-shaped.

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16. (Previously Presented) The apparatus of claim 15, wherein the transducer assemblies are powered by a battery.

17. (Previously presented) The apparatus of claim 14, wherein the transducer assemblies are configured to generate data enabling a display device to display correct caudal-cranial positioning of the transducer assemblies over a human bladder.

18. (Previously Presented) The apparatus of claim 1, wherein the at least one transducer assembly is connected with a cable to a housing containing an input device, a processor, a display and a power supply unit.

19. (Previously Presented) The apparatus of claim 1, wherein the at least one transducer assembly further includes an ultrasound coupling material covering the transducers for optimal acoustic coupling and patient convenience.

20. (Previously Presented) A method to determine a fluid volume occupying a body cavity comprising:

positioning at least one transducer assembly in view of the body cavity;

transmitting, with the at least one transducer assembly, ultrasound to the body cavity;

receiving, with the at least one transducer assembly, at least one echo reflected from surfaces associated with the body cavity;

accessing a look-up table of data;

determining at least one harmonic energy level value associated with the at least one echo, the data describing a correspondence between the harmonic energy level value and the fluid volume; and

calculating the fluid volume contained in the body cavity based upon the data.

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21. (Previously Presented) The method of claim 20, wherein determining at least one harmonic energy level value associated with the echoes includes applying computer executable signal processing software with programmed instructions to differentiate information from fundamental and harmonic signals.

22. (Previously Presented) The method of claim 20, wherein positioning includes positioning an array of transducer assemblies configured to transmit ultrasonic beams into the subject with a predetermined spatial location and mounting angle.

23. (Previously Presented) The method of claim 22, wherein the array of transducer assemblies are acoustically coupled to the skin of the subject being measured using an acoustic coupling material.

24 (Previously Presented) An apparatus to determine a fluid volume occupying a bladder comprising:

at least one transducer assembly positioned in view of the bladder and configured to transmit ultrasound of at least one acoustic power having a fundamental frequency to the bladder, receive echoes having a harmonic frequency and the fundamental frequency reflected from surfaces associated with the bladder, convert the fundamental and harmonic frequency echoes into fundamental and harmonic signals, and identifying from the fundamental and harmonic signals those deriving from echoes having reflected from the posterior wall of the bladder and transiting through the fluid volume and anterior wall of the bladder; and

a computer in signal communication with the at least one transducer assembly, the computer having access to a look-up table of calibration factors and executable signal processing software with programmed instructions to determine at least one harmonic energy level value associated with the echoes and to measure a bladder height and a bladder depth and to calculate the fluid volume contained in the bladder based upon the at least one harmonic energy level

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value associated with an echo having passed through the fluid as a function of associating the bladder height and the bladder depth with the calibration factors in the look-up table.

25. (Previously Presented) The apparatus of claim 24, wherein the fluid volume comprises a urine volume.

26. (Previously Presented) The apparatus of claim 25, wherein the at least one transducer assembly is adapted to transmit a beam of ultrasound sufficient to entirely subtend the bladder.

27. (Previously Presented) The apparatus of claim 24, wherein the programmed instructions comprise signals derived from predetermined depth ranges for the determination of fluid volume in the bladder.

28. (Previously Presented) The apparatus of claim 26, wherein transducer assembly comprises a curved single active piezo-electric element, shaped to form ultrasound beams at least one of a sphere sector and a cone sector.

29. (Previously Presented) The apparatus of claim 28, wherein the ultrasound transducer assembly includes a wide-angle lens to distribute the ultrasound beams to approximately encompass the bladder.

30. (Previously Presented) The apparatus of claim 29, wherein the transducer assembly is adapted to transmit at a fundamental ultrasound frequency and is adapted to receive the fundamental and higher harmonic signals of the transmitted frequency.

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34. (Previously Presented) The apparatus of claim 27, wherein the programmed instructions to determine at least one harmonic energy level value associated with the echoes include algorithms for determining the scattered power of higher harmonics in the received signal and comparing the scattered power with the backscattered power in the fundamental frequency to calculate the fluid volume.

35. (Previously Presented) The apparatus of claim 34, wherein the at least one acoustic power includes a low transmit power and a high transmit power to enhance bladder filling measurement and eliminate patient variation due to instance obesity using combined pulse sequences arising from the low transmit and high transmit powers.

36. (Previously Presented) The apparatus of claim 35, wherein the combined pulse sequences arise from echo signals at a depth close to the position of the average anterior bladder wall in determining the fluid volume to limit the effects of variation in the body proximal to the transducer assembly.

37. (Previously Presented) The apparatus of claim 36, wherein the combined pulse sequences arise from echo signals may be altered by varying the transmitted power in subsequent pulse transmissions, such that linear and non-linear echo signals from various depths can be compared to eliminate effects of patient variation.

38. (Previously Presented) The apparatus of claim 37, wherein the variation in calculating the fluid volume may be in the form of a calibration curve derived from the look up table.

39. (Previously Presented) The apparatus of claim 24, wherein the at least one transducer assembly include a display adapted to indicate a volume above a predetermined threshold level, the threshold level being determined according to a specified medical application.

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40. (Previously Presented) The apparatus of claim 39, wherein the display indicates a filling below a predetermined threshold level, the threshold level being determined according to a specified medical application.

41. (Previously Presented) The apparatus of claim 24, wherein the at least one transducer assembly is housed separately and connected to the rest of the apparatus with a flexible cable.

42. (Previously Presented) The apparatus of claim 24, wherein the at least one transducer assembly comprises a combination of a first acoustic active surface for optimal transmission and reception at the fundamental frequency and second acoustic active surface for optimal reception of the harmonic echo signals.

43. (Previously Presented) The apparatus of claim 24, wherein the at least one transducer assembly comprises a plurality of ultrasound transducers mounted thereon for transmitting and receiving a plurality of ultrasound signals into the bladder at least one of plural angles of incidence and plural spatial locations for providing a narrow beam direction in the dorsal direction to detect the anterior and posterior bladder wall.

44. (Previously Presented) A method to determine a fluid volume occupying a body cavity comprising:

positioning at least one transducer assembly in view of a body cavity;

transmitting a fundamental ultrasound frequency of at least one acoustic power to the body cavity;

receiving echoes having the fundamental ultrasound frequency and at least one harmonic frequency thereof associated with the body cavity;

converting the received ultrasound echoes into fundamental signals and harmonic signals;

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identifying among the fundamental and harmonic signals those being associated with select echoes having reflected from the posterior wall of the body cavity and transited through the fluid contained within the body cavity and the anterior wall of the body cavity;

determining at least one harmonic energy level value associated with the echoes;

measuring a height and a depth of the body cavity from signals derived from the select echoes; and

calculating a fluid volume contained in the cavity based upon the at least one harmonic energy level value associated the select echoes using calibration factors contained in a look-up table to convert the height and the depth to the fluid volume.

45. (Previously Presented) A method for detecting a body cavity of a subject, measuring the volume of the body cavity and a fluid volume contained in the body cavity comprising:

positioning at least one transducer assembly in view of the body cavity;

transmitting a fundamental ultrasound frequency of at least one acoustic power to the body cavity;

receiving echoes having the fundamental ultrasound frequency and at least one harmonic frequency thereof associated with the body cavity;

converting the received ultrasound echoes into fundamental signals and harmonic signals;

identifying among the fundamental and harmonic signals those being associated with select echoes having reflected from the posterior wall of the body cavity and transited through the fluid contained within the body cavity and the anterior wall of the body cavity;

measuring a height and a depth of the body cavity from signals derived from the select echoes;

determining boundary information of the cavity from the harmonic signals in terms of the depth, the height, and a correction factor, K obtainable from a look-up table; and

calculating the fluid volume from a calibration curve obtainable from the look-up table.

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46. (Previously Presented) The method of claim 45, wherein the correction factor K is obtainable from the look up table and the calibration curve.

47. (Cancelled)

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